The Carburetor and ~~Injection~~ Fuel-Pump Bureau of the Ministry of Automobile Industry of the USSR

As early as at the beginning of 1946 a development bureau for carburetors and ~~injection~~ fuel pumps was established at 207 Greifswalder Strasse. It was headed by a Lieutenant-Colonel Chereyskiy who obviously had never worked in this field in Russia or only to a very limited extent.

The original plan was to order from SOLEX a sizeable number of a suitable carburetor for a small engine with a piston displacement of approximately 1.5 liters, but later this intention was dropped because this firm was located in the British Sector of Berlin. Instead the Pallas Carburetor Company was induced to move part of its plant from the French sector into the Russian sector (Frankfurter Allee) in order to start ~~an~~ its own carburetor production there.

According to Chereyskiy, in the meantime Moscow had decided to copy the Opel "Kadett", a small German car, in Russia. In addition to Pallas carburetors this plant also produced spare parts and nozzles for Solex carburetors, gasoline pumps, etc., although without the consent of the original manufactureres. As assistant to the Russian directors a Mr. Wucherer, former chief engineer of Erich & Gratz of Berlin was hired, but he was not able to set up the plant as it would have been necessary.

The plan to copy the Pallas carburetor model was destined to failure from the start since Pallas had not built carburetors for automotive engines for years and, therefore, lacked up-to-date designs. Furthermore there was a lack of experts who could have run the new plant. Nevertheless, the manufacture of one of the older models was started, and at the beginning

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of 1947 tests on a 1.3-liter Opel engine were made on the test stand of the ATB in Chemnitz. The fuel consumption of the engine with this carburetor was very high, being 100 percent above the values attained with the serially manufactured Carter carburetor of Opel.

Upon completion, the first 1,500 carburetors were sent to Moscow where they were said to have received little praise.

Shortly after the start of the carburetor production, Moscow gave the order to manufacture ~~injection~~ fuel pumps for two-cycle diesel engines of General Motors Co. This engine has been copied in Russia for considerable time but the defects encountered in operation were so numerous that all vehicles, mostly buses, equipped with this engine could be used only within the city of Moscow where they could easily be hauled away for repairs. This information is authentic and comes from Mr. Dormidontov. Copying the pumps in Russia appeared not to be successful because otherwise the same order would not have been sent to Berlin.

The negotiations held with the Dreilinden (near Potsdam) plant of Bosch concerning the manufacture of pumps failed. This plant had been built before the war upon orders of the Air Ministry and had produced almost exclusively gasoline ~~injection~~ fuel pumps for aircraft engines. The Russians had completely evacuated the plant after their arrival, and a large part of the special machinery required for pump manufacture was still subject to disposal by the Trophies Section of the Red Army in Halle. The Bosch company had agreed to manufacture the pumps if the machine tools which could not be procured elsewhere would be returned, but this was refused by the Trophies ~~Department~~ Section in Halle in spite of much effort on the part of the Soviet authorities in Berlin.

Thereupon a Dr. Grosse, who had been a production engineer for ~~injection~~ fuel pumps with Junkers, for some time during the war, agreed to write

a report on pump manufacture. Subsequently, the manufacture of the copy of the GMC pumps was begun in several small plants in the vicinity of Dessau. Dr. Grosse had been very cautions in advising the Russians in writing that these small shops equipped with inadequate machine tools and measuring instruments would ~~be~~ not fit to perform precision work required in the extremely difficult manufacture of pumps. Mr. Wucherer, who had not previously concerned himself with this problem, assumed that responsibility in Dr. Grosse's place. The result was negative. The first 150 pumps which were sent to Russia did not function satisfactorily. Chereyskiy was ordered to Moscow and did not return. He was accused of being mainly responsible for this failure and was required to pay one third of the costs incurred. Moreover, the respective firms were to deliver faultless pumps free of charge.

In Chereyskiy's place Engineer Kryachek came to Berlin. The latter succeeded in obtaining the services of Rischert, a production engineer of the Bosch Company, as assistant. Rischert had worked during the war as production manager in Dreilinden. It is not known to what extent he succeeded in producing usuable pumps since no reports on the more recent test results have been available in Moscow.

Apparently the higher authorities are not yet satisfied, for, after Kryachek's office had been transferred to Adlershof in 1948, an order came from Moscow to construct eight different testing devices with which the accuracy of the machining of the various parts of the pump could be checked continuously. In order to determine the structural details of these testing devices, Kryachek formed a 12-member commission which, under the chairmanship of Oberbaurat Augustin, was to clarify all problems. The requirements set up by the Russians with regard to the testing devices

proved that they had been compiled without any great knowledge of the functioning of the pumps themselves and of their manufacture.

The first thing noticed on the part of the Germans was that the pumps had not been manufactured according to original drawings but they represented a combination of features of one or several US-made pumps. The lack of expert knowledge of the problems involved is demonstrated in the following two examples:

(1) Lack of expert knowledge regarding the functioning of the pumps.

It was required that the fuel jet emanating from a nozzle aperture of a diameter of 0.2 mm have a width of 13 arc degrees with a tolerance of 0.5 minutes. It was impossible to make it clear to the Russians that the control of the jet width, which could be effected only during a very minute fraction of a second, would be very complicated and impossible to be achieved under operating conditions. Even more difficult would be to measure the difference of one half of an arc minute, which constitutes 1/7200 (sic) part of the whole circumference. In the case of $13^{\circ} = 780'$, 0.5' would mean a tolerance of exactly 0.064 percent, which would be impossible to attain and which, at any rate, would be smaller than the source of error inherent in the measurement itself. Although the Russians initially resisted a change of this requirement, they consented after continued negotiation to 0.5 degrees, i.e., a 60 times greater tolerance. But also this could not be attained in practice.

An additional consideration is that it is completely immaterial for the combustion process what the width of the fuel jet is. The wider the jet, the easier it is for the air to reach the individual fuel particles and, consequently, the combustion improves. The Russians could not be convinced of this; on the contrary, they threatened to revert to 0.5 minutes if the Germans persisted in discussing this topic.

(2) Lack of expert knowledge in the field of manufacture

A tolerance of 0.005 mm was required for a pump piston. This tolerance was not in accordance with any of the known dimensions, also a proof of the fact that no American original drawings had been used. In the course of a conversation regarding the question from where this unusual dimension originated, the Russians declared after many evasive replies that they had measured a number of original pump pistons, added the deviations found, and calculated the arithmetic mean.

The Russians insisted on their demand for development of all the testing devices, and a number of engineers are at present still engaged in designing same. Since Mr. Rischert moved into the Western Zone in January of this year /1947, nobody is left to control and supervise this difficult work. A failure could thus hardly be prevented but, in the final analysis, this must be attributed to the rigid adherence of the Russians to an opinion based on completely erroneous assumptions.

In the branch plant of the Pallas Carburetor Company on the Frankfurter Allee a carburetor test stand was set up which, however, does apparently not yet come up to the demands made of it. The former BMW (now converted into a Soviet A. G.), no longer having access to its own accurate test stands, at present conducts its carburetor test - including those of the Pallas carburetor - at the BTB in Adlershof.